



Part #: RR231

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Technical Support (318) 388-0816

## NP231 SHORT SHAFT "FIXED YOKE" KIT

### KIT CONSISTS OF:

<u>No.</u>	<u>Qty</u>	<u>Part No.</u>	<u>Description</u>
1.	1	51-7905	TAILHOUSING, DIECAST
2.	1	52-7905	SHAFT, MAIN OUTPUT
3.	1	300474	SEAL WASHER, REAR YOKE
4.	1	300475	YOKE, C.V. REAR
5.	1	300476	NUT, REAR YOKE
6.	1	300480	SEAL WASHER, FRONT YOKE
7.	1	300625	RING GEAR, SPEED-O-
8.	2	300627	SNAP RING, SPEED-O- RING GEAR
9.	1	716318	BEARING, 207 OPEN BALL (No Snap Ring)
10.	1	716464	SNAP RING, 207 BEARING
11.	1	716465	RETAINER RING, MODE
12.	1	716751	SEAL, TAILHOUSING



**SPECIAL NOTE:** On vehicles that have the vacuum actuator on the tailhousing, we have supplied a tailhousing that will provide you the necessary vacuum actuator connection. NOTE: The shift rail must be shortened to protrude 1" when in 4WD low or 4WD high.

### INSTALLATION PROCEDURES:

Every effort has been made to make sure your kit fits and works right the first time. However, if you happen to experience a problem with your kit, please contact us at our technical assistance line at (318) 388-0816, Monday through Friday 8:00 AM to 6:00 PM CST.

The installation of this kit requires you to nearly disassemble the entire transfer case. If your transfer case is in need of a rebuild, now is the perfect time to do it. To install this kit, it is easier to remove your transfer case and set it on end upon a workbench, but it is not necessary.

Here are a couple of points to keep in mind that will make the installation much easier if you've never disassembled a New Process transfer case:

1. Keep all bolts, nuts, washers, etc. separated into groups as you remove them. Make sure you keep them in a labeled container that indicates what part of the transfer case they came from.
2. Keep all small parts in separate containers and label as to location and origin.
3. Make sure you have plenty of time and a clean, spacious area to perform the installation.

### THINGS TO CONSIDER BEFORE YOU BEGIN:

1. This kit is shipped with a rear 1310 series C.V. type yoke. You will need a C.V. equipped driveshaft.
2. Medium strength threadlocker is recommended on all threaded fasteners.
3. A sealant such as RTV, (like the OEM sealant) is needed and is available from your local Jeep/Dodge dealer. P/N 82300234.

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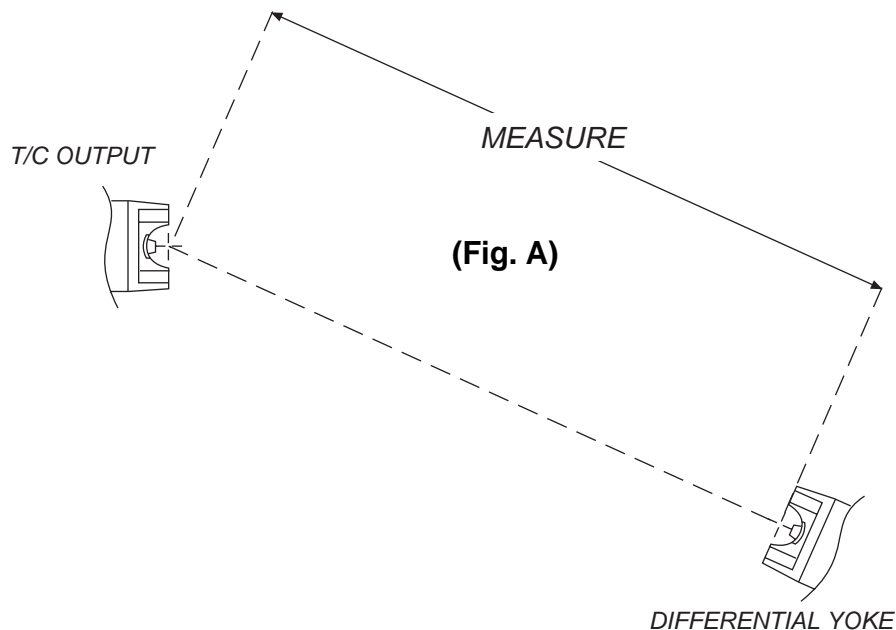
## NP231 SHORT SHAFT "FIXED YOKE" KIT

### **DRIVE SHAFT MODIFICATION:**

This job should be performed by a local driveline repair shop capable of balancing the finished assembly.

**(Use a C.V. joint & long slip spline style shaft assembly.)**

With the vehicle finished and on the ground, measure a straight line between the transfer case output yoke and the rear pinion yoke center mating flanges. **(Fig. A)**

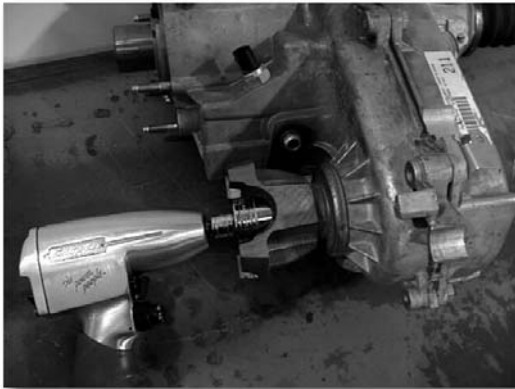


For proper C.V. type drive shaft operation, the rear differential should be pointed at the transfer case output yoke under normal driving load. If install is performed on jack stands, make sure you have supported the vehicle well!

Place the transfer case range selector in the 4L position. Remove front & rear drive shafts and begin at the disassembly procedures. **(Step 1, Fig. 1)**

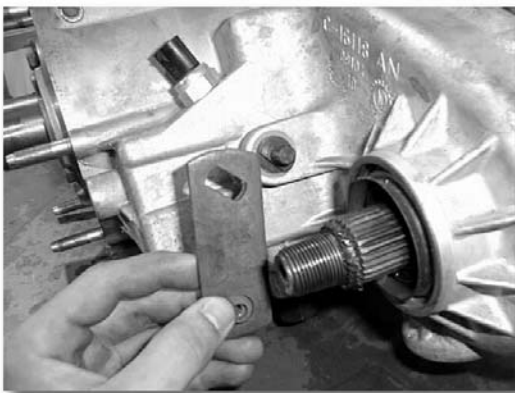
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## NP231 SHORT SHAFT "FIXED YOKE" KIT



**(Fig. 1) Yoke Nut Removal**

- (1) Remove Speed-o-drive.
- (2) Remove front yoke nut:
  - (a) Move range lever to 4L position.
  - (b) Remove front yoke nut with 1-1/8" socket using an impact wrench. **(Fig. 1)**
- (3) Remove yoke. **Note:** If difficult, use a puller. (Discard seal washer).
- (4) Remove selector lever. **(Fig. 2)**



**(Fig. 3) Slinger Removed (TJ Illustrated)**

- (5) Remove output shaft boot. Spread band clamps with an Awl. Slide boot off.
- (6) Remove slinger, (this one is tough)! Good thing you won't need this later. **(Fig. 3)**
- (7) Remove stop spacer & snap ring. **(Fig. 4)**



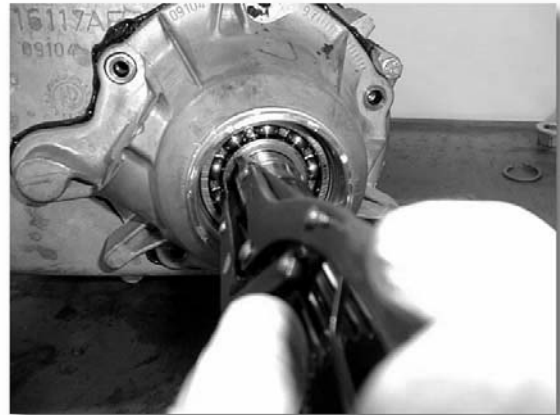
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**(Fig. 5) Rear Seal Removal**

- (8) Remove rear seal. Collapse with punch if needed. **(Fig. 5)**



**(Fig. 6) Rear O.D. Snap Ring Removal**

- (9) Remove rear bearing retaining rings. **(Fig. 6) & (Fig. 7)**

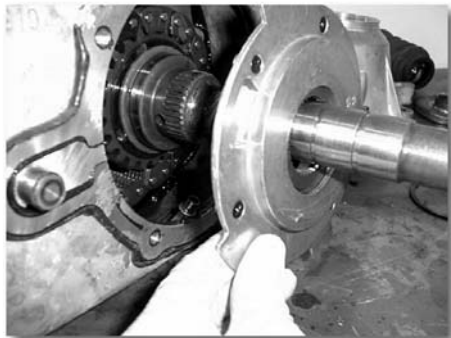


**(Fig. 8) Rear Tailhousing Removal**

- (10) Remove tailhousing bolts with 10mm socket & remove tailhousing. **(Fig. 8)**

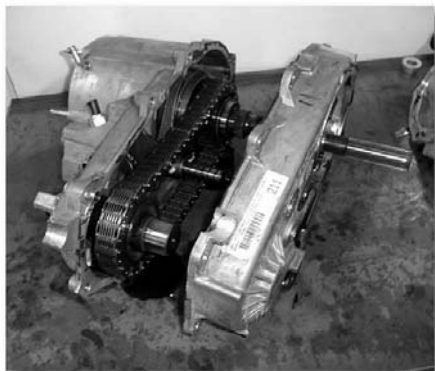
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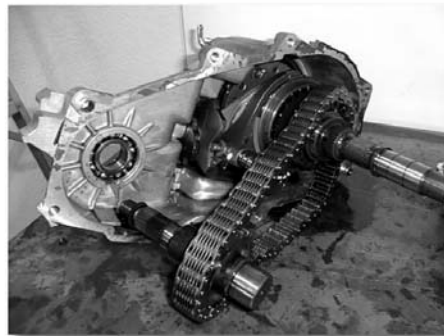
(Fig. 9) Oil Pump Removal

- (11) Disconnect the pump pickup tube visible at lowest point of tailhousing opening. **(Fig. 9)**
- (a) Remove the pump from the main output shaft.
- (b) Inspect the pickup tube "o-ring" in the pump and replace if needed. The same goes for the front shaft seal in the pump. **DO NOT** disassemble the pump; it is not a serviceable item.
- (12) Remove the rear case bolts. A 10mm 12 pt. socket is needed for the spline head bolt & a 15mm socket for the remaining bolts. **NOTE:** The two black oxide finished bolts are located at the case dowel positions and require a washer under them.



(Fig. 10) Rear Case Half Removal

- (13) Remove the rear case from the front case by inserting pry bars at the cast-in locations **ONLY!** **(Fig. 10)**
- (a) Pry apart evenly to break the sealer bead along the case mating surfaces.
- (b) Remove, clean and inspect the inner case for wear.



(Fig. 11) Front Drive Chain & Shaft Removal

- (14) Front output shaft removal:
- (a) Pull the front output shaft out of the front bearing. **(Fig. 11)**
- (b) Slide drive chain off the rear output shaft and remove both shaft and chain for cleaning & inspection.
- (15) Rear output shaft removal: (a) Grasp the main shaft and remove the shaft, drive sprocket and mode hub assembly.



(Fig. 12) Front Drive Chain & Shaft Removal

- (16) Output shaft disassembly:
- (a) Remove the mode hub retaining ring with heavy duty snap ring pliers. **(Fig. 12)**
- (b) Slide remaining components, mode hub & drive sprocket off shaft.
- (17) This is as far into the case you need to go unless you find foreign material inside usually caused by a worn or stretched drive chain. You will need to be the judge.

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## NP231 SHORT SHAFT "FIXED YOKE" KIT

SKYJACKERfi has supplied two types of NP231 output shafts over the past years. The current production output shaft is similar to the NP231 shaft found in the "TJ" series Wranglers. This TJ shaft did not use a caged needle bearing on the drive sprocket. We decided to use this design, since this is the most current design engineered & being produced by New Process Gear.

The earlier short shaft we supplied was similar to the "YJ" series Wranglers. This shaft uses a set of caged roller bearings, installed in the drive sprocket.

This information is provided to you to verify which style shaft you have so installation is properly performed.

TJ style shaft  
Current kit design.  
No needle bearings required.  
See Page 7 for assembly considerations.



YJ style shaft  
Previous kit design.  
Needle bearings (P/N 716319) &  
thrust washer (P/N 716320) required.  
See Page 8 for assembly considerations.

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## NP231 SHORT SHAFT "FIXED YOKE" KIT

### *Shafts that resemble the TJ* ASSEMBLY CONSIDERATIONS



(Fig. 1A) Drive Sprocket Needle Bearings

These bearings must be removed. Once the bearings are removed, clean the inside of the drive gear to make sure it is free of any type of debris.



(Fig. 2A) Pull the Needle Bearings Out



(Fig. 3A) New Main Output Shaft Assembly

- (2) Main shaft assembly:
- (a) Clean all components.
  - (b) Prelube all components with a quality assembly lubricant. (Fig. 3A)
  - (c) Slide drive sprocket into position.
  - (d) Slide mode hub into position.
  - (e) Install the retaining ring into position after the mode hub. (Fig. 4A)



(Fig. 4A) (Large) Retaining Ring Installation

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## NP231 SHORT SHAFT "FIXED YOKE" KIT

### *Shafts that resemble the YJ* **ASSEMBLY CONSIDERATIONS**



**(Fig. 1A) Drive Sprocket Needle Bearing Installation**

- (1) Component assembly:
  - (a) Care should be taken not to distort the housed bearing element when installing the new bearing. **(Fig. 1A)**
  - (b) Press bearings into both sides of the drive sprocket so they seat just past the inside chamber. **(Fig. 2A)**
  - (c) If you are not comfortable at this point, you should take this step to a local machine shop.



**(Fig. 2A) Installed Needle Bearings in Drive Sprocket**



**(Fig. 3A) New Main Output Shaft Assembly**

- (2) Main shaft assembly:
  - (a) Clean all components.
  - (b) Prelube all components with a quality assembly lubricant. **(Fig. 3A)**
  - (c) Slide drive sprocket into position.
  - (d) Slide mode hub into position.
  - (e) Install retaining ring into position after the mode hub. **(Fig. 4A)**

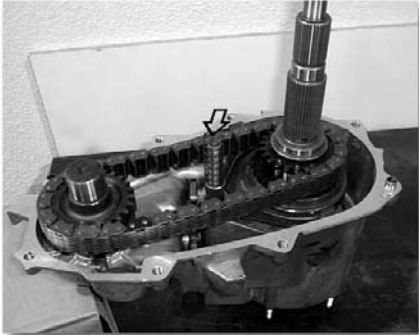


**(Fig. 4A) (Large) Retaining Ring Installation**  
**CONTINUE TO PAGE 9**

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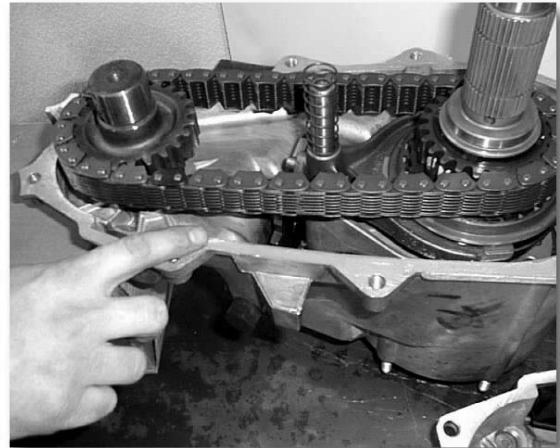
(Fig. 5A) New Main Output Shaft Assembly

- (3) Output shaft and drive chain assembly:
  - (a) Lubricate chain & shaft with ATF.
  - (b) Insert main shaft assembly into the housed planetary assembly.
  - (c) Install the drive chain onto the front output shaft.
  - (d) Insert them into the bearing. Lift upward and tilt the shaft toward the main shaft to work the chain into position. **(Fig. 5A)**
- (4) Make sure the mode spring is in place, seen in the middle. **(Fig. 5A)**



(Fig. 6A) Case Half Pre-assembly

- (5) Rear case assembly:
  - (a) With all components clean, install oil pump.
  - (b) Seat the pickup tube into the pump "o-ring". **(Fig. 6A)**
  - (c) Prelube the front output shaft bearing located in the rear case.
- (6) Apply a thin film of sealant to the front case. Use a good RTV, like the OEM sealant, available from your local Jeep dealer. **(Fig. 7A)** P/N = 82300234.



(Fig. 7A) Thin film RTV Applied Prior to Mating Case Halves.

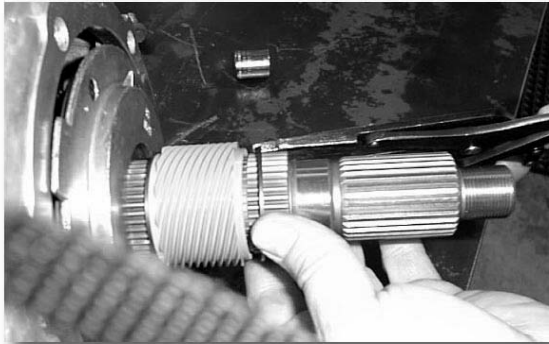


(Fig. 8A) Case Halves Assembled

- (7) Assembly of case halves: **(Fig. 8A)**
  - (a) Slide the pump & case into position.
  - (b) If you have difficulty, check for possible problems. **DO NOT FORCE!** Mode fork rail extends through rear case!
  - (c) Install all fasteners in their original positions. **(Black bolts at dowel locations!)**
  - (d) Torque evenly to 27-34 N.m (20-25 ft./lbs.)

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## NP231 SHORT SHAFT "FIXED YOKE" KIT



(Fig. 9A) Speed-o- Ring Gear Install

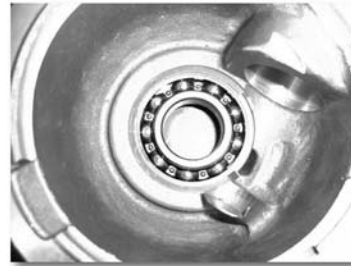
- (8) Assemble speed-o- drive
- Install retaining ring, located just behind the pump.
  - Slide ring gear into position.
  - Install retaining ring behind ring gear. **(Fig. 9A)**



**NOTE:** On some NP231 transfer cases, the shift rail must be shortened. This shift rail protrudes out of the transfer case and goes into the tailhousing. The new tailhousing has a pocket depth of 1.125".

Shift your transfer case so the shift rod is protruding the furthest out of the transfer case. If this shifter rod protrudes more than 1" out of the back side of the transfer case, then the shift rail must be shortened. Transfer cases that will normally require this rail to be shortened measure 1.5" (photo above left).

Using a hack saw or cutoff wheel (and safety glasses), trim the shift rail shaft so that it protrudes only 1" (photo above right).



(Fig. 10A) Bearing Installed and Retained with the 716464



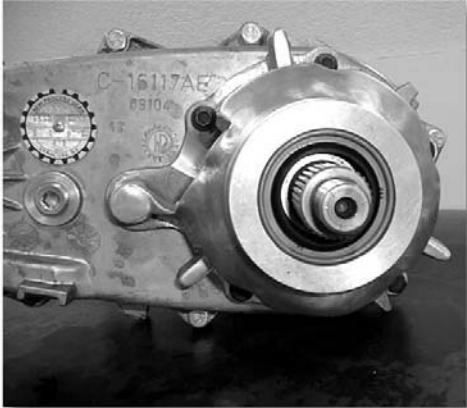
(Fig. 11A) Seal

- (10) Short Tailhousing Installation:
- Prelube bearing & seal in new short tailhousing assembly. **(Fig. 11A)**
  - Apply sealant to tailhousing, mating surface of rear case. (thin film)
  - While supporting main shaft, slide new tail assembly into position.
  - Use care when indexing pump outer tabs and aligning tail assembly for installation. **(Fig. 12A)**
- NOTE: Pull back on the output shaft to seat it against the rear bearing.**
- Install the (5) 10mm bolts that retain the tailhousing and torque evenly to 20-27 N.m (15-20 ft./lbs.)



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**(Figures 13A) Final Installation**

- (11) Yoke & Seal Washer installation: (This will apply to both Front & Rear yoke assembly)
  - (a) Slide the yoke seal into position on the shaft thread.
  - (b) Lube yoke with ATF.
  - (c) A little trick to keep the spline seal in good shape is to slide the yoke half way on and walk the yoke into position with the retaining nut. (Be sure to apply thread-lock to the retaining nut). Torque to 140 150 ft./lbs. with 1-1/8" socket.
  - (d) Install your stock speedometer housing into your new tailhousing. A touch of RTV Blue silicon around the "o"-ring will help seal this area.
- (12) Fill to recommended level with ATF.
- (13) Reconnect all exterior items: driveshafts, 4WD switch, speedometer cable, etc.
- (14) Happy Trails!

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**(BULLETIN)**

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## ATTENTION!

**NOTE:** If your jeep transfer case output shaft is equipped with a harmonic balancer, this balancer must be removed with a puller at step #5 during disassembly.

The harmonic balancer is pressed onto the output shaft, a balancer puller will be required to remove this item without damage. The balancer has three threaded holes to aid in this disassembly. *(see arrow at right)*

Refer to repair manual during this process. This balancer will not be required once the fixed yoke kit is installed.



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